ACCESSION NR: AR4014555   S/0276/63/000/012/B091/B091

SOURCE: RZh. Tekhnologiya machinostroyeniya, Abs. 12B614

AUTHOR: Ponomarenko, A. D.; Svirskiy, L. D.

TITLE: A method for producing protective enamel thermal diffusion coatings
with special properties

CITED SOURCE: Tr. Khar'kovsk. Politekhn. in-ta, v. 45, 1963, 64-70

TOPIC TAGS: enamel, thermal diffusion, heat diffusion, heat resistant enamel,
refractory enamel, aluminum

TRANSLATION: Results are given of research on the possibility of producing a
heat resistant enamel layer on steel by means of treatment of a preliminarily
obtained enamel (which, however does not have heat resistance and other special
properties) in melted aluminum by diffusion of the latter in the enamel layer.

DATE ACQ: 09Jan64   SUB CODE: MA, EL   ENCL: 00

Card 1/1

ACCESSION NR: AP4012577   S/0072/64/000/002/0033/0036

AUTHORS: Svirskiy, L. D. (Candidate of technical sciences); Salganik,
        L. L. (Engineer)

TITLE: The role of electrical conductivity of fusion of priming
       enamels during the reaction with metal

SOURCE: Steklo i keramika, no. 2, 1964, 33-36

TOPIC TAGS: electrical conductivity, priming enamel, enamel coating,
bonding activator, cobalt oxide, cupric oxide, enamel, paint

ABSTRACT: The lack of a single generally acknowledged theory of
bonding of an enamel coating with metal can be explained by the
diversity of processes of reaction of a liquid priming melt with
metal. Results confirm that the role of bonding activators in the
prime coating (in the given case CoO) leads to its effect on electri-
cal conductivity of enamel fusion. To some extent this causes inten-
sification of the electro-chemical processes and determines to a
significant degree the bonding strength of the primer with metal.
This may be explained by the strengthening of the anode solution in

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ACCESSION NR: AP4012577

the priming melt with an increased value of its electrical conducti-
vity. During annealing of the enamel coating, the surface of the
steel is not as rough as in annealing of the priming which contains
cobalt oxides. This is the basic cause of the extremely low strength
of bonding with steel of the prime coating containing cupric oxide
as bonding activator. The processes of electro-chemical corrosion of
metal during annealing of prime coating are not the only determina-
tions of strength and character of bonding but also the diffusion
processes, the effects associated with adhesion of fusion to metal,
etc. Research on electrical conductivity of liquid prime enamel
fusions in connection with the processes of their reaction with
metal opens new ways of increasing the bonding strength of the coat-
ing with metal, improves their quality and the development of coat-
ings without priming. Orig. art. has: 4 Figures.

ASSOCIATION: Khar'kovskiy politekhnicheskiy institut imeni V. I.
        Lenina (Kharkov Polytechnical Institute)

SUBMITTED: 00   DATE ACQ: 03Mar64   ENCL: 00
SUB CODE: CH   NR REF SOV: 005   OTHER: 001

Card   2/2

L 16298-65   EWP(e)/EPA(s)-2/EWT(m)/EWF(c)/EPF(n)-2/EPR/EPA(w)-2/EWP(t)/EPA(bb)-2/
EW7 E   Pab-10/Pr-u/Ps-h/Pt-10/Pu-i   ASD(m)-3   JD/WW/JQ/AT/WH
ACCESSION NR: AP4045453   S/0072/64/000/009/0031/0035

AUTHOR: Svirskiy, L. D. (Candidate of technical sciences);
Pirogov, Yu. A. (Engineer)

TITLE: Investigation of the properties of refractory coatings flame-
sprayed on metal

SOURCE: Steklo i keramika, no. 9, 1964, 31-35

TOPIC TAGS: refractory coating, refractory oxide coating, refractory
mineral coating, flame sprayed coating, sprayed coating structure,
sprayed coating mechanical property

ABSTRACT: A study has been made of the physicomechanical properties
of refractory coatings flame-sprayed on shot-blasted plain or
nichrom-plated carbon steel. Sintered rods 2 mm in diameter made of
powdered refractory oxides or minerals were fed at a rate of 200 to
350 mm/min. The pressure of acetylene and oxygen varied from 0.2 to
1.5 and 2.5 to 8 atm, respectively. Examination of the structure
of the coatings showed that ZrO_2 and CeO_2 coatings consisted of

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L 16298-65
ACCESSION NR: AP4045453

partially fused particles with voids occluded between them. The
α -Al_2O_3 coating partially crystallized to γ -Al_2O_3, the monoclinic
ZrO_2 was transformed to a cubic modification, and zircon decomposed
to cubic ZrO_2 and silica glass. The $CaZrO_3$ coating consists mostly
of cubic ZrO_2. During spraving, coatings made of oxides of Ce, Ti,
[illegible] ilmenite were partially reduced to lower oxides and even to
metals and became vitreous. An Mg_2Al_3 intermetallic compound was
formed in the aluminamagnesia spinel coating. Physicomechanical
properties were studied on coatings lifted from a copper substrate.
All coatings had open porosity which varied from 5% in coatings of
alumina(roasted at 1450C) and of forsterite to 12% in coatings of
Zr. Roasted alumina and sintered corundum coatings had the highest
hardness, 993 and 1040 kg/cm^2, respectively, and also the high-
est bend strength, 25 and 24 kg/cm^2, respectively. The elasticity
modulus of the coatings were lower by one order than those of sinter-
ed materials. The strongest adhesion to the substrate had alumina-
magnesia spinel and CrO coatings. Except for a CeO_2 coating, all
coatings thinner than 0.4—0.6 mm sustained without failure 120 cycles
of heating to 600C in 10 min followed by air-cooling to 40C in 2 min.
Orig. art. has: 2 figures and 2 tables.

Card 2 / 3

L 16298-65
ACCESSION NR: AP4045453 $\mathscr{2}$

ASSOCIATION: Khar'kovskiy politekhnicheskiy institut im. V. I.
... (Kharkov Polytechnic Institute); Ukrainskiy nauchno-issledovatel'-
... institut khimicheskogo mashinostroyeniya (Ukrainian Scientific
Research Institute of Chemical Machinery)

SUBMITTED: 00   ENCL: 00   SUB CODE: MM

NO REF SOV: 003   OTHER: 007

Card 3/3

L 1705-66   EWP(e)/EPA(s)-2/EWT(m)/EPF(c)/EWP(i)/EPA(w)-2/EWP(t)/EWP(b)/ETC(m)

ACCESSION NR: AP5021511 IJP(c)   JD/WW/WH UR/0131/65/000/008/0042/0046
666.76.055.1

AUTHOR: Svirskiy, L. D.; Pirogov, Yu. A.

TITLE: Effect of some factors on the process of forming heat resisting, heat protecting coatings

SOURCE: Ogneupory, no. 8, 1965, 42-46

TOPIC TAGS: refractory materials, refractory coating, corundum, zirconium, zirconium oxide, aluminum, aluminum oxide, magnesium, spray nozzle

ABSTRACT: A study was made of the dependence of the mean diameter of particles (d_m) of the refractory melt forming the coating on the distance (ℓ) of the nozzle from the surface being coated. With increasing distance, the layer is more and more formed of large particles. The final velocity with which the particles reach the surface is a major factor in determining the adhesive strength to the metal and other properties of the coating. This final velocity, v_{fin}, was determined for different materials as a function of the pressure of the air injected into spray pistol, P, and distance from the surface, ℓ. The rate of the process differed for the following materials: sintered corundum, sintered zirconium

Card 1/2

L 1705-66

ACCESSION NR: AP5021511 ϕ

dioxide, spinel, zirconium, and aluminum oxide. Results are exhibited graphi-
cally. Operating parameters of the experiments generally were: ℓ = 50 mm;
P = 2. 4 atm.; v_c = 212 mm/min; and alpha = 90°, where v_c is the feed rate of
the metal rod into the pistol, and alpha is the angle of the jet spray to the surface.
It was found that with an increase in P and alpha and a decrease in ℓ , the density
of the coatings increases and spraying losses decrease. The greatest adhesive
strength was attained at alpha = 90°, ℓ = 15-20 mm, and P = 4. 2 atm. Prelimi-
nary heating of the samples to 150-200 C led to an increase in adhesion of the
coating to the surface. At high preheating temperatures adhesive strength de-
creased and this is explained by oxidation of the metal surface and by increased
compression stresses in the coatings. These stresses result from the fact
that the coefficient of thermal expansion of the metal is greater than that of the
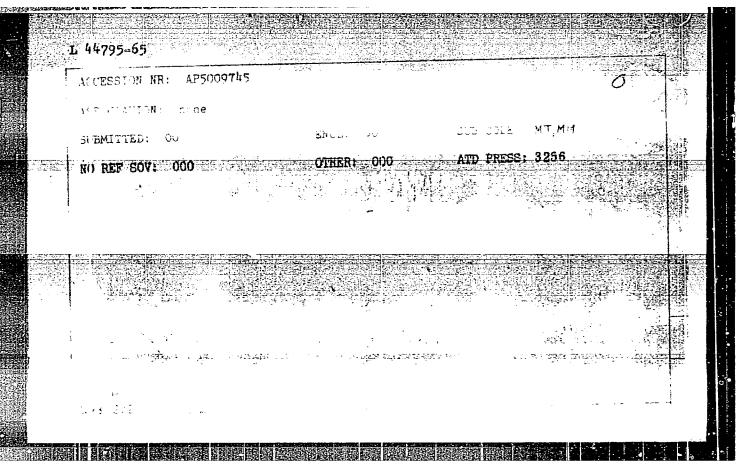coating. Orig. art. has: 8 figures
ASSOCIATION: Khar'kovskii politekhnicheskii institut im. V. I. Lenina
(Polytechnic Institute, Kharkov) Ukrainskii nauchno-issledovatel'skii institut
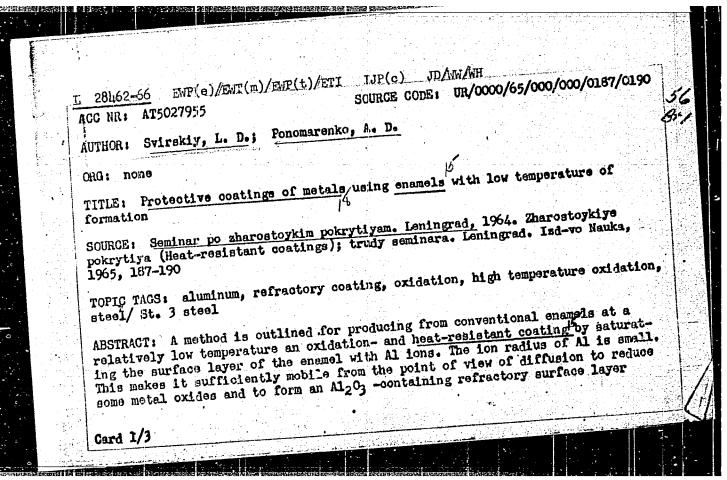khimicheskogo mashinostroyeniya (Ukrainian Research Institute for Chemical
Equipment Fabrication)
SUBMITTED: 00 4455 ENCL: 00   SUB CODE: MM, IC
NR REF SOV: 004   OTHER: 005
Card   2/2

L 44795-65   EWP(e)/EPA(s)-2/EWT(m)/EPF(n)-2/EWG(m)/EPR/EWP(t)/EWP(b)
PE-4/Pt-7/Pu-4   IJP(c)   AT/WH/WW/JD/JG

UR/0136/65/000/004/0087/0087

AUTHOR: Svirskiy, L. D.; Ponomarenko, A. P.

TITLE: Protective enamel base coatings

SOURCE: Tsvetnyye metally, no. 4, 1965, 87

TOPIC TAGS: protective coating, enamel protective coating, metal structural part protection

ABSTRACT: The problem of producing protective coatings by impregnating ordinary enamels with aluminum ions in order to protect metal structures against the action of molten nonferrous metals was studied. The low-carbon steel specimens were coated with two enamel layers. The first layer was fired at   and the second at 880C for 2—5 min each in to their fusion points. The enameled specimens were then subjected to the effect of molten aluminum at 150—500C for 1.5—2 hr. During this time a   coating 50—75   thick, with a melting temperature of about 1600C,   considerably, protect against acids (including fluoric acid) and alkalies, have a high microhardness and erosion resistance at elevated temperatures, and protect completely against the action of molten aluminum, zinc, lead, and tin. The optimum enamel composition is given in the article. Orig. art. has: 2 figures and 1 table. [WW]

Card 1/2

L 44795-65

ACCESSION NR: AP5009745

ACCESSION: none

SUBMITTED: 00   ENCL: 00   SUB CODE   MT,MM

NO REF SOV: 000   OTHER: 000   ATD PRESS: 3256

L 28462-66   EWP(e)/EWT(m)/EWP(t)/ETI   IJP(c)   JD/JW/WH

SOURCE CODE: UR/0000/65/000/000/0187/0190

ACC NR: AT5027955

AUTHOR: Svirskiy, L. D.; Ponomarenko, A. D.

ORG: none

TITLE: Protective coatings of metals using enamels with low temperature of formation

SOURCE: Seminar po zharostoykim pokrytiyam. Leningrad, 1964. Zharostoykiye pokrytiya (Heat-resistant coatings); trudy seminara. Leningrad. Izd-vo Nauka, 1965, 187-190

TOPIC TAGS: aluminum, refractory coating, oxidation, high temperature oxidation, steel/ St. 3 steel

ABSTRACT: A method is outlined for producing from conventional enamels at a relatively low temperature an oxidation- and heat-resistant coating by saturating the surface layer of the enamel with Al ions. The ion radius of Al is small. This makes it sufficiently mobile from the point of view of diffusion to reduce some metal oxides and to form an Al_2O_3-containing refractory surface layer

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L 28462-66

ACC NR: AT5027955

capable of withstanding high-temperature oxidation. Acid-resistant ground enamels $(SiO_2$ 48.2; Al_2O_3 8.66; CaO 0.38; Na_2O 22.53; K_2O 1.2; B_2O_3 10.82; CaF_2 5.0; CaO 0.73; Na_2SiF_6 2.48 %) and finishing enamels $(SiO_2$ 58.0; Al_2O_3 4.4; CaO 2.8; Na_2O 18.0; K_2O 4.3; CaF_2 1.9; ZnO 1.5; B_2O_3 1.5; TiO_2 6.6; Cr_2O_3 1.0 %) were used as initial materials. The refractory materials (10%) were added during grinding of the granules of these enamels. The Al_2O_3 was ground into ground enamel and either Cr_2O_3, MgO, ZrO_2, ZnO, Al_2O_3, talc, or quartz glass was ground into finishing enamel. The procedure did not require any noticeable increase in the baking temperature, which was 900C for ground enamels and 880C for finishing enamels. The samples (plates made of St. 3 steel) coated with these enamels were subjected for 2 hours to the action of molten Al at 750-800C. A diffusion layer 50-70 μ thick was formed on the enamel surface. The diffusion layer was separated from the object by the dissolving the metal and enamel-base layer in 40% HF solution. A preliminary study of its composition showed that it contained metallic Si and corundum, and that it was a substance of the cermet type having a melting point of 1600C. These diffusion layers were electroconductive and heated up if connected with an electric current. The coatings possessed good protective properties against gas corrosion. Their corrosion resistance could be increased by increasing both the time of exposure to molten Al and the temperature of molten Al. These protective coatings possessed a very high resistance to the action of liquid

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L 28462-66

ACC NR: AT5027955

Al, Zr, Pb, and Sn, as well as a high chemical stability under the action of alkalies and acids including HF. The coatings had a very high microhardness (≤ 1000 kg/mm^2) and good adhesion to metal. Orig. art. has: 3 fig. and 1 table.

SUB CODE: 11/ SUBM DATE: 20Jul65/ ORIG REF: 002/ OTH REF: 004

Card 3/3 ZC

L 17846-66   EWT(m)/EWP(e)/EWP(t)   IJP(c)   WH/WW/JD/GS
ACC NR: AT5027956   SOURCE CODE: UR/0000/65/000/000/0191/0200

AUTHOR: Svirskiy, L. D.; Pirogov, Yu. A.

ORG: none

TITLE: Formation and properties of high-temperature oxidation-resistant
coatings produced by the gas-flame method

SOURCE: Seminar po zharostoykim pokrytiyam. Leningrad, 1964. Zharostoykiye
pokrytiya (Heat-resistant coatings); trudy seminara. Leningrad, Izd-vo Nauka,
1965, 191-200

TOPIC TAGS: vapor plating, heat resistance, aluminum, zirconium, titanium,
chromium, nickel, cobalt, zinc oxide, bending stress, hardness, fabricated
structural metal, refractory coating, adhesion

ABSTRACT: A study was made of the effect of formation conditions of coatings,
applied with a UR-2 oxyacetylene torch, on the properties of refractory coatings
containing Al, Zr, Ti, Cr, Ni, Co, Zn oxides, Ca zirconate, ilmenite, forsterite,
and Al-Mg spinel. Rods were made from these materials 3mm in diameter and 300-
400 mm long by using water glass as a binder and by subsequent roasting at 1650°C.
The average velocity of the molten particles (v) which adhered to the surface of

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L 17846-66

ACC NR: AT5027956

the coated metal plate was determined by changing the rpm of disc, with attached samples and using the formula $V = \pi Dnk/60s$, where D is the diameter of the circle passing through the center of the samples, n is the rpm of the disc, k is the distance from the sample, and s is the displacement of the place of the particle fall on the sample surface during the rotation of the disc measured from the place of the particle fall when the disc is not rotating. The V varied within a large range (50-200 m/sec) and increased with increased air pressure (P), dispersing the melt, and with a decreasing distance of the gun nozzle from the sample (l). The average size of particles (D) forming the coating, increased with increased l because the small-size particles were cooled with increased l, to the degree that they could adhere to the coated surface. The increase of angle (α) of the trajectory of the particles to the coated surface and the increase in air pressure P increased the density of the coating and decreased the loss of refactory material. But the increase of P above 4.5 atm for the coatings made of ZrO_2 and sintered zirconium, resulted in an increase in losses during coating. The optimal conditions were $P = 4-5$ atmospheres, α equal or near 90C, at a minimum rate of rod delivery in the flame and a minimum of l which was still sufficiently long to prevent the overheating of the coated metal. A coating made of alumina and sintered corundum had the largest microhardness and bending strength. The values

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L 17846-66

ACC NR: AT5027956

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of the modulus of elasticity of the coating were on order smaller then those of sintered materials, whereas the thermal expansion coefficients of the coating were similar to those of sintered materials. The coatings from alumina, forsterite, Cr oxides, CeO_2, and ZnO had the smallest open porosity. Most 0.4-0.6 mm thick coatings (except CeO_2), applied to a metallized nichrome sublayer (0.2-0.3mm thick) had relatively good heat resistance. The sublayer of nichrome produced a better adhesion of the coating than the sublayer of molybdenum and stainless steel. Preheating of the substrate to 180-200°C increased the strength of adhesion. Orig. art. has: 7 fig. and 1 table.

SUB CODE: 11/ SUBM DATE: 20Jul65/ ORIG REF: 004/ OTH REF: 004

Card 3/3 nst

ACC NR: AP7000332   SOURCE CODE: UR/0413/66/000/022/0084/0084

INVENTOR: Svirskiy, L. D.; Sobol', N. P.

ORG: none

TITLE: Oxidation-resistant enamel. Class 32, NO. 188635 [announced by the Kharkov Polytechnic Institute im. V. I. Lenin (Kharkovskiy politekhnicheskiy institut)]

SOURCE: Izobreteniya, promyshlennyye obraztsy, tovarnyye znaki, no. 22, 1966, 84

TOPIC TAGS: steel oxidation, high temperature oxidation, high temperature oxidation protection, oxidation resistant enamel, corresion, corrosion resistance

ABSTRACT: This Author Certificate introduces an oxidation-resistant enamel based on silicon dioxide, barium oxide, and zinc oxide, for protecting alloy steels from high-temperature corrosion. To increase the coefficient of thermal expansion of the enamel and to lower its firing temperature, the composition is set as follows (in %): silicon dioxide 40—50, barium oxide 10—18, lead oxide 24—38, potassium oxide 5—10, and zinc oxide 4—8.   [TD]

SUB CODE: 11, 13/ SUBM DATE: 09Jun65/ ATD PRESS: 5109

Card 1/1   UDC: 666.293.5

ACC NR: AP7006787

SOURCE CODE: UR/0073/66/032/012/1357/1360

AUTHOR: Svirskiy, L. D.; Ponomarenko, A. D.

ORG: Kharkov Polytechnic Institute im. V. I. Lenin (Khar'kovskiy politekhnicheskiy institut)

TITLE: Enamel coatings on steel with high protective properties

SOURCE: Ukrainskiy khimicheskiy zhurnal, v. 32, no. 12, 1966, 1357-1360

TOPIC TAGS: enamel, protective coating, metal diffusion

ABSTRACT: A new method is proposed for preparing protective enamel coatings on steel which are characterized by a marked heat resistance, a high chemical stability, great hardness, and a high strength of bonding to the metal. The method involves diffusion of aluminum ions into regular-type enamels, the diffusing medium employed being molten aluminum. Forming of these coatings takes place at relatively low temperatures (850-900°). This excludes any impairment of the properties of the metal, as would be the case with many heat-resistant coatings at temperatures of 1200° and above. Preliminary analysis of the composition of the surface layers on the enamels by x-ray diffraction and petrographic methods showed these layers to consist of crystalline substances whose melting points ranged from 1550 to 1600°. Orig. art. has: 3 figures and 3 tables.

SUB CODE: 11/ SUBM DATE: 11Jan65/ ORIG REF: 002/ OTH REF: 003

Card 1/1

UDC: 666.293

DUBININA, V.N.; KORNILOVICH, I.A.; SVIRSKIY, M.A.; SOBACHKIN, N.G.

Oxidation zone of lead-zinc and arsenic-lead-zinc deposits in
eastern Transbaikalia. Trudy IGEM no.83:577-606   '63.

(MIRA 16:11)

SANIN, B.P.; SVIRSKIY, M.A.

Methods of prospecting for lead-zinc deposits in eastern Trans-
baikalia. Trudy IGEM no.83:630-638 '63.   (MIRA 16:11)

SVIRSKII, M. S.

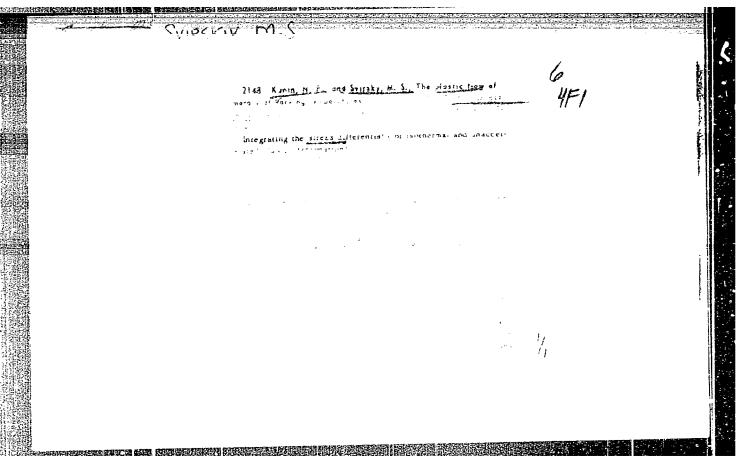Svirskii, M. S. (Physics) Rate of propagation of light in nonlinear electrodynamics.
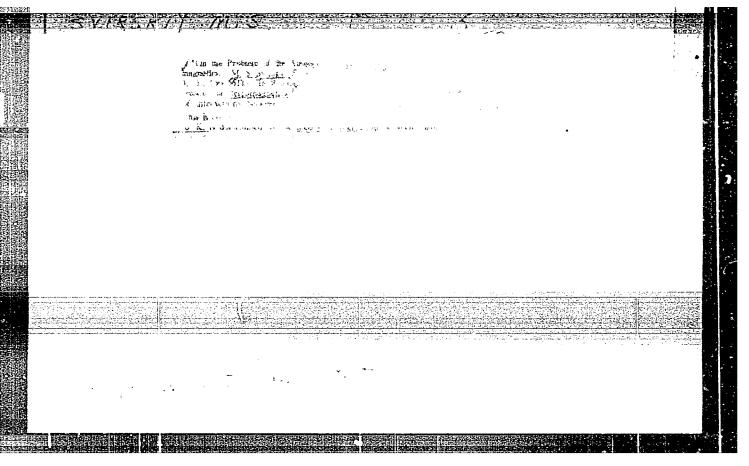P. 43

Chair of Theoretical Physics
July 11, 1950

SO: Herald of the Moscow University, Series on Physics-Mathematics and Natural
Sciences, No. 3, No. 5, 1951

SVIRSKIY, M.S.

Heat conductivity of metals taking electron interaction into account
(a case of Bose spectrum). Fiz.met. i metalloved..1 no.3:568-569 '55.

(MIRA 9:6)

1.Chelyabinskiy gosudarstvennyy pedagogicheskiy institut.
(Heat--Conduction) (Metals)

Synecky M. S.

2148   Kanin, N. E. and Svirsky, M. S. The elastic area of

Integrating the stress differentials of isothermal and unaccel-

6
4F1

SVIRSKIY. M.S.

Category : USSR/Solid State Physics - Solid State Theory. Geometric E-2
           Crystallography

Abs Jour : Ref Zhur - Fizika, No 3, 1957, No 6490

Author   : Svirskiy, M.S.
Inst   : Cholyabinsk State Pedagogical Institute, USSR
Title   : Thermal Conductivity of Metals with Allowance for the
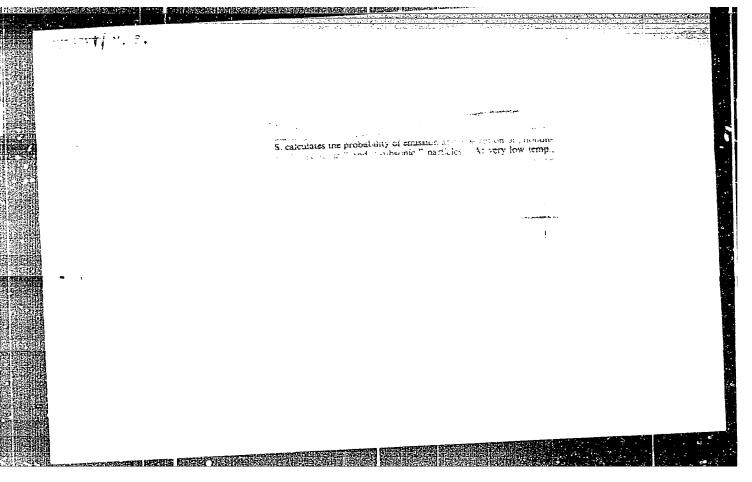   Electron Interaction (Case of Bose Spectrum).

Orig Pub : Fiz. metallov i metallovedeniye, 1956, 1, No 3, 568-569

Abstract : Following the Vonsovskiy method (Vonsovskiy, S.V., Vlasov,
           K.B., Sokolov, A.V., Zhur eksperim i toer. fiziki, 1951, 21,
           1185), the author xonsiders the interaction between "doublets"
           and "holes" with thermal oscillations of the lattice in the
           presence of an external field and of a temperature gradient.
           Solution of the kinetic oquation for the case of the lowest
           temperature yield for the thermal-conductivity coefficient,
           the thermal emf, and the Thomson coefficient values that are
           independent of the temperature. The Peltier coefficient de-
           pends linearly on the temperature. The letter three coef-
           ficients represent the differences in the corresponding

Card   : 1/2
  Card   : 2/2

5. calculates the probability of emission and absorption of photons and subatomic particles at very low temp.

SVIRSKIY, M S

AUTHORS: Svirskiy, M. S. and Vonsovskiy, S. V.

TITLE: On the possibility of spontaneous ionisation in the system of interacting electrons of a crystal. (O vozmozhnoy samoproizvol'noy ionizatsii v sisteme vzaimodeystvuyushchikh elektronov kristalla).

PERIODICAL: "Fizika Metallov i Metallovedeniye" (Physics of Metals and Metallurgy), 1957, Vol.4, No.3, pp. 392-399 (U.S.S.R.)

ABSTRACT: Fundamentally two approximations are available for solving the multi-electron problem of the crystal. One is based on the generalised Geitler-London-Geisenberg model, the other is based on the model of collectivised electrons. It is usually assumed that the first model can be successfully utilised in investigating various properties of the electron system of crystals of dielectrics and semi-conductors, whilst the second can be successfully applied for crystals of metals and alloys. Shubin and Vonsovskiy (1) showed that it is possible to utilise the first mentioned model for metallic crystals; thereby, the quasi-classical approximation was utilised which enabled accurate determination of the relation of the mutual distribution of the minima of the energy levels of the electron system on the number of ionised nodes 2s. It is shown that only those naive classical conceptions

Card 1/4

126-3-2/34

On the possibility of spontaneous ionisation in the system
of interacting electrons of a crystal. (Cont.)

shown by/more systematic consideration of the quantum effects.
The problem of determination of the lowest energy state of
a system of interacting electrons within the framework of the
polar model was also considered in the work of Bogolyubov,N.N.
and Tyablikov, S.V. (4,5); they give a quantitative justifica-
tion of the ideas of Mott that the existence of a weakly
ionised state is, from the energy point of view, unfavourable.
Detailed analysis of this problem, given in this paper, shows
that this conclusion is unjustified. It is concluded that
the distribution of the energy levels of the homeopolar and
the ionised states in a crystal have a direct and complicated
dependence on the ratio of the absolute values of the atom
energies of various types in the crystal, due to the quasi-
classical as well as the specific quantum part of the electro-
static interactions of electrons in the crystal. Therefore,
partial as well as full spontaneous ionisation of the electron
states may occur and it can be stated that the generalised
Geitler-London-Geisenberg model can be applied for explaining
phenomena relating to the metallic conductivity.
There are one graph and 6 references, four of which are Slavic.

Card 3/4

AUTHORS: Svirskiy, M.S. and Ishmukhametov, B. Kh.   126-5-3-22/31

TITLE: The Statistics of Spin Waves (K voprosu o statistike spinovykh voln)

ABSTRACT: Frank's (Ref.1) deduction that spin waves follow Fermi statistics, from the incorrect argument that the wave-function for states of identical wave-numbers vanish, is shown to be incorrect, because the secular equations for adjacent left-handed spins are (incorrectly) applied to non-adjacent ones. The extra 'condition' introduced by Frank (Eq.(1) in the paper) is not applicable. A simple application of the Pauli principle is sufficient to show that Eq.(1) is self-contradictory.   A simple reworking of the argument, from Eqs.(3) and (4) (secular equations), shows that Frank also deduced the number of solutions to Bethe's equations incorrectly (value too large).   It is argued, but not rigorously demonstrated, that spin waves therefore follow Bose-Einstein statistics.   The paper contains 17 equations. The subject of this paper was proposed by Corresponding

Card
1/2

The Statistics of Spin Waves   126-5-3-22/31

   Member of the Ac.Sc. S. V. Vonsovskiy.
   There are 2 references, one of which is Soviet, 1 German.

ASSOCIATION: Institut fiziki metallov Ural'skogo Filiala AN SSSR
   (Institute of Metal Physics, Ural Branch of the Ac.Sc.,
   U.S.S.R.)

SUBMITTED: May 21, 1957

   1. Nuclear spins--Statistical analysis   2. Wave analysis
   3. Mathematics

Card 2/2

SVIRSKIY, M. S.: Master Phys-Math Sci (diss) -- "Some problems of the quantum multielectron theory of metals at low temperatures". Sverdlovsk-Chelyabinsk, 1958. 7 pp (Chelyabinsk State Pedagogical Inst), 150 copies (KL, No 2, 1959, 118)

SOV/56-35-6-19/44

24(5)
AUTHORS: Vonsovskiy, S. V.,   Svirskiy, M. S.

TITLE: On the Problem of the Statistics of Spin- and Polar Excitations
               in Crystals (K voprosu o statistike spinovykh i polyarnykh
               vozbuzhdeniy v kristalle)

PERIODICAL: Zhurnal eksperimental'noy i teoreticheskoy fiziki, 1958,
               Vol 35, Nr 6, pp 1447-1456 (USSR)

ABSTRACT: It was proved by some papers (Refs 1-3) that the spin waves
               (ferromagnons) occur not as bosons but as fermions. Also for
               the polar elementary excitations (of "twins" and "holes") in
               electron systems of crystals this question was discussed
               (Ref 4). In this connection the question is of interest as to
               the statistical classification of ferromagnons and polar ex-
               citation. The present paper deals with some faults committed
               in dealing with the spin- and polar excitations in crystals
               (which may lead to the occurrence of fictitious states
               (Refs 2, 5, 6)), and it is shown that if these faults are
               eliminated, the spin waves may be assigned to the bosons;
               for polar excitation the question is investigated as to when
               it is caused by bosons. Further, the question is discussed as
               to how this method of second quantization is to be formulated
Card 1/2

SOV/56-35-6-19/44

On the Problem of the Statistics of Spin- and Polar Excitations in Crystals

if one has a finite number of particles that can be described by symmetric wave functions (bosons). It is shown that quasi-particles (separable in the system of interacting crystal electrons) obey Fermi statistics in such cases in which "single electron transitions" correspond to the solution, and that they obey Bose (Boze) statistics if "two electron transitions" play the part of a solving agent in the dynamics of the system. (Correspondingly: half-integral spin → Fermi statistics, integral spin → Bose statistics). The results obtained by this paper verify the opinion expressed by I. M. Lifshits (Ref 4) concerning the statistics of "twins" and "holes" at the Kiyev Conference on Semiconductors (1956). There are 17 references, 7 of which are Soviet.

ASSOCIATION: Institut fiziki metallov Akademii nauk SSSR
(Institute for Metal Physics of the Academy of Sciences, USSR)

SUBMITTED: June 17, 1958

Card 2/2

AUTHORS: Vonsovskiy, S. V., Corresponding Member   SOV/20-120-2-12/63
Academy of Sciences, USSR, Svirskiy, M. S,

TITLE: On the Theory of the Superconductivity of Metals (K teorii
sverkhprovodimosti metallov)

ABSTRACT: Some authors (Refs 1,3) were very successful in explaining the
microscopic nature of this phenomenon. However, these authors
investigated the properties of weakly interacting gases of
Fermi particles (electrons) and Bose particles (phonons) out-
side the binding with the structure of the metal. It is there-
fore interesting to use the multielectronic model of the
metal (Ref 4)   in the investigations of this problem. The
authors investigate a system of interacting external electrons
of a crystal. The corresponding Hamiltonian is given explicitly,
after which then it is transformed. In this expression for the
Hamiltonian H one may separate the disturbation due to the
interaction with the phonons. The investigation of the separa-
ted expression for H makes it possible to affirm the existence
of the superconductivity in the investigated system. A formula

Card 1/3

On the Theory of the Superconductivity of Metals   SOV/2o-12o-2-12/63

for the critical temperature is given. A criterion for the superconductivity is the prevailing of the interaction with the phonons over the shielded interaction. According to the considerations of this paper, it may be assumed that $L < 0$ and great values of $Z_{effective}$ are favourable for the existence of the superconductivity. L is a term figuring in the expression of H. In order to verify this conclusion the authors computed T_{eff} according to Slater's (Sleter) method and found the following result: For every superconductor with the exception of Nb ($Z_{effective} = 2.8$) the inequation $Z_{eff} > 3$ holds good. The maximal value of Z_{eff} of all the superconductors was found for Bi ($Z_{effective} = 6.3$). The upper limits of $Z_{effective}$ in any period are determined by the superconductors. Within the indicated limits the following metals are non-superconductive: Fe, Co, Ni, Cu, Rh, Pd, Ag, W, Ir, Pt, and Au. The above mentioned and also other facts lead to the following conclusion:The investigation of $Z_{effective}$ and of the methods to increase $Z_{effective}$ is a simple and useful way leading to the explanation of the available experimental data and to the

Card 2/3

On the Theory of the Superconductivity of Metals   SOV/20-120-2-12/63

search of new superconductive elements and compounds. There
are 1 figure and 1o references, 7 of which are Soviet.

ASSCCIATION: Institut fiziki metallov Ural'skogo filiala Akademii nauk
SSSR(Institute of Metal Physics, Ural Branch, AS USSR)

SUBMITTED: March 3, 1958

1. Metals—Conductivity   2. Superconductivity—Theory

Card 3/3

SOV/2o-122-2-11/42

24(3)
AUTHORS: Vonsovskiy, S. V., Corresponding Member, Academy of Sciences, USSR, Svirskiy, M. S.

TITLE: Concerning the Problem of the Absence of Superconductivity in Ferromagnetics (K voprosu ob otsutstvii sverkhprovodimosti v ferromagnetikakh)

PERIODICAL: Doklady Akademii nauk SSSR, 1958, Vol 122, Nr 2, pp 2o4-2o7 (USSR)

ABSTRACT: It is interesting to investigate this problem from the point of view of the new microtheory of superconductivity (Refs 2, 3, 4) where the peculiarities of the energy spectrum of the external (s) electrons have to be taken into account. These peculiarities may be considered, for instance, in the (s-d) exchange model of the ferromagnetic metals. (S. V. Vonsovskiy, Ref 5). At $T = 0$, in the normal state of the ferromagnetics, there are 3 regions in the $\vec{k}$ space. ($\vec{k}$ denotes the wave vector). In region I there are equal quantities of spins of the 2 possible orientations. In region II there are only s-electrons of the left spin orientation, and in region III there are only holes. The following conclusions may be drawn from the

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SOV/2o-122-2-11/42

Concerning the Problem of the Absence of Superconductivity in Ferromagnetics

calculations discussed in this paper: From the point of
view of the new microtheory, the absence of the supercon-
ductivity in the ferromagnetics is an internal property of
the system of its electrons. This property is caused by the
relatively strong (s-d) exchange interaction. The supercon-
ductivity, therefore, can be observed only in those ferro-
magnetic metals which have a very weak (s-d) exchange inter-
action. There are 13 references, 8 of which are Soviet.

ASSOCIATION: Institut fiziki metallov Ural'skogo filiala Akademii nauk SSSR
(Institute of the Physics of Metals of the Ural Branch, AS USSR)

SUBMITTED: June 12, 1958

Card 2/2

24(8)
AUTHORS: Vonsovskiy, S. V., Svirskiy, M. S.   SOV/56-36-4-43/70

TITLE: On the Problem of the Superfluidity of
                  Bose Polar Excitations (K voprosu o sverkhtekuchesti
                  sistemy bozevskikh polyarnykh vozbuzhdeniy)

PERIODICAL: Zhurnal eksperimental'noy i teoreticheskoy fiziki, 1959,
                  Vol 36, Nr 4, pp 1259-1266 (USSR)

ABSTRACT: A number of papers is first discussed which deal with the
                  microtheory of superconductivity, and the assumptions
                  concerning the nature of the statistics of the elementary
                  current carriers are discussed. Whereas in some cases
                  Fermi statistics is used, the majority of authors work with
                  Bose or Bose-Einstein statistics. In the present paper the
                  authors investigate a system of charged Bose polar
                  excitations by means of the method employed by Bogolyubov
                  for analyzing the superfluidity of a weakly non-perfect
                  Bose-Einstein gas. The possibilities for a superconductive
                  state in metals was investigated for the case in which the
                  elementary current excitations of the electron system are
                  quasibosons. The problem is solved within the framework

Card 1/2

On the Problem of the Superfluidity of   SOV/56-36-4-43/70
Bose Polar Excitations

of the "polar" many-electron crystal model. Criteria are
obtained for the possible existence of a supraconductive
state in the system of charged bosons: low temperature,
small thickness of the quasiparticles, practically no
"single-electron" transitions, and negative sign of the
exchange integral. The phonon-induced interaction between
the current Bose particles is of an attractive character
and impedes the occurrence of the superconductivity of the
latter. The dependence of the critical temperature of a
superconductor with Bose current carriers on the isotopic
mass of the crystal ions differs from that of a metal
with a Fermi electron spectrum. This difference can be
used in order experimentally to divide the superconductors
in to such of Fermi- and such of the Bose type. There are
14 references, 10 of which are Soviet.

ASSOCIATION: Institut fiziki metallov Akademii nauk SSSR (Institute for
                 Metal Physics of the Academy of Sciences, USSR)

SUBMITTED: October 27, 1958
Card 2/2

83188
S/056/60/039/002/025/044
B006/B056

2A.2140

AUTHORS: Vonsovskiy, S. V., Svirskiy, M. S.

TITLE: The Superconductivity of a Ferromagnetic With Weak Exchange
              Interaction

PERIODICAL: Zhurnal eksperimental'noy i teoreticheskoy fiziki, 1960,
              Vol. 39, No. 2(8), pp. 384-392

TEXT: Already in an earlier paper (Ref. 1) the authors have shown that
a shift of the Fermi sphere of s-conduction electrons with opposite
spin projections depends on their coupling with d- or f-electrons of the
inner spin-unsaturated shells, i.e., it is due to (s-d) exchange inter-
action and prevents the occurrence of superconductivity in ferromagnetics
such as Fe, Co, and Ni. Ferromagnetics with sufficiently weak (s-d) ex-
change interaction can become superconductive; as a condition it was found
that $\mu J \ll \hbar\omega$, where μ is the excess of d- or f-electrons with predominat-
ing spin orientation, i.e., the relative magnetization of these electrons
at the lattice points, J = the energy parameter of (s-d) exchange, and
ω = the mean phonon frequency. The influence exerted by the Fermi sphere

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The Superconductivity of a Ferromagnetic
With Weak Exchange Interaction

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S/056/60/039/002/025/044
B006/B056

of the jumps of specific heats at T_c, from a measurement of α_1 as a func-
tion of $H_c^2(T)$ according to formula (43) of the present paper, etc. The
shift of the Fermi surface indicates superconductivity only if the (s-d)
exchange coupling is weak. N. N. Bogolyubov is mentioned. There are
10 references: 4 Soviet, 5 US, and 1 Japanese.

ASSOCIATION: Institut fiziki metallov Akademii nauk SSSR
                (Institute of Physics of Metals of the Academy of Sciences,
                USSR).
                Chelyabinskiy gosudarstvennyy pedagogicheskiy institut
                (Chelyabinsk Pedagogical State Institute)

SUBMITTED: March 3, 1960

Card 3/3

VONSOVSKIY, S.V.; SVIRSKIY, M.S.

Spin of phonons. Fiz.tver.tela 3 no.7:2160-2165 Jl '61.
(MIRA 14:8)

1. Institut fiziki metallov AN SSSR, Sverdlovsk i Chelyabinskiy
pedagogicheskiy institut.
(Quantum electrodynamics)

VONSOVSKIY, S.V.; SVIRSKIY, M.S.; VOLKENSHTEYN, N.V.

Direct determination of shear of Fermi surfaces on polarized
conduction electrons in ferromagnetic materials. Fiz. met. i
metalloved. 12 no.2:285-287 Ag '61.   (MIRA 14:9)

1. Institut fiziki metallov AN SSSR.
                    (Fermi surfaces) (Ferromagnetism)

25190
S/056/61/040/006/011/031
B111/B201

24,7900

AUTHORS: Vonsovskiy, S. V., Svirskiy, M. S.

TITLE: ·   Interaction of conduction electrons induced by spin waves in
              a ferromagnetic substance

PERIODICAL: Zhurnal eksperimental'noy i teoreticheskoy fiziki, v. 40,
              no. 6, 1961, 1676 - 1681

TEXT: The interaction between conduction electrons and electrons partic-
ipating in magnetic ordering of atoms leads to two effects: 1, displace-
ment of Fermi spheres for conduction electrons with different spin
projections, and 2, additional interaction of conduction electrons induced
by spin waves. Since various methods had already been applied to this·
problem in the past, the authors of the present paper applied Bogolyubov's
method (N. N. Bogolyubov, V. V. Tolmachev, D. V, Shirkov, Novyy metod v
teorii sverkhprovodimosti, Izd. AN SSSR, 1958). The Hamiltonian of the
conduction electrons interacting with spin waves:of the ferromagnetic :
material is

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$$H = U_0 + \sum_h e_{h\uparrow} c^+_{h\uparrow} c_{h\uparrow} + \sum_h \varepsilon_{-(h+\chi)\downarrow} c^+_{-(h+\chi)\downarrow} c_{-(h+\chi)\downarrow} +$$

$$+ \sum_g \omega_g b^+_g b_g - \frac{1}{\sqrt{N}} \sum_{h,h'} J c^+_{-(h+\chi)\downarrow} c_{h'\uparrow} b^+_{h'+h+\chi} + \text{к. с.,}$$

where $\varepsilon_{k\uparrow} = E_k + \frac{1}{2}\mu J - E_F$, $\varepsilon_{k\downarrow} = E_k - \frac{1}{2}\mu J - E_F$ (Ref. 7: S. V. Vonsovskiy, Ye.

A. Turov, ZhETF, 24, 419, 1953). $|K + \chi| \gtrless k_{F\downarrow}$ with $|K| \gtrless k_F\uparrow$, where $k_F\uparrow$,

$k_{F\downarrow}$ denote radii of Fermi spheres for electrons with right-hand and left-hand projection in the k-space. Since the total momentum of the interacting pairs in the case concerned is non-vanishing, Bogolyubov's canonical transformation cannot be applied. It is, in fact, necessary to pass over to new Fermi operators α_{K0} and α_{K1}. $\alpha_{k0} = u_{k\uparrow} c_{k\uparrow} - v_{k\uparrow} c^{\pm}_{(k+\chi)\downarrow}$,

$\alpha_{k1} = u_{k1} c_{-(k+\chi)\downarrow} + v_{k\uparrow} c^+_{k\uparrow}$ (5) is valid, where $u^2_{k\uparrow} + v^2_k\uparrow = 1$, $u_{k\uparrow} = u_{-k\uparrow}$,

$v_{k\uparrow} = -v_{-k\uparrow}$ (4). The possibility of coupled pair formation is examined.

Here, $u_{k\uparrow} v_{k\uparrow}$ must be non-vanishing. The Hamiltonian (1) may be written

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S/056/61/040/006/011/031
B111/B201

Interaction of conduction electrons ...

in the form где (where)

$$H = U_1 + H_0 + H_1 + H_2 + H_3,$$

$$U_1 = U_c + \sum_k [\varepsilon_{k\uparrow} + \varepsilon_{k+\chi,\downarrow}] v_k^2,$$

$$H_0 = \sum_k [(\varepsilon_k u_k^2 - \varepsilon_{k+\chi,\downarrow} v_k^2) \alpha_{k0}^+ \alpha_{k0} + (\varepsilon_{k+\chi,\downarrow} u_k^2 - \varepsilon_{k\uparrow} v_k^2) \alpha_{k1}^+ \alpha_{k1}] + \sum_\varepsilon \omega_\varepsilon b_\varepsilon^+ b_\varepsilon, \quad (8\text{-}13)$$

$$H_1 = -\frac{1}{\sqrt{N}} \sum_{k,k'} J (u_k v_{k'} \alpha_{k1}^+ \alpha_{k'1}^+ - u_{k'} v_k \alpha_{k0} \alpha_{k'0}) b_{k'+k+\chi}^+ + \text{к.c.},$$

$$H_2 = -\frac{1}{\sqrt{N}} \sum_{k,k'} J (u_k u_{k'} \alpha_{k1}^+ \alpha_{k'0} - v_k v_{k'} \alpha_{k0} \alpha_{k'1}^+) b_{k'+k+\chi}^+ + \text{к. c.},$$

$$H_3 = \sum_k (\varepsilon_{k\uparrow} + \varepsilon_{k+\chi,\downarrow}) u_k v_k (\alpha_{k0}^+ \alpha_{k1}^+ + \alpha_{k1} \alpha_{k0}).$$

If the terms with $\alpha_{K0}^+ \alpha_{K1}^+$ are put equal to zero, in second approximation. an equation can be obtained for compensation:

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S/056/61/040/006/011/031

Interaction of conduction electrons....   B111/B201

$$\xi_h u_h v_h = -\frac{1}{2N}(u_h^2 - v_h^2)\sum_{h'} J^2 u_{h'} v_{h'} \times$$

$$\times [\omega_{g=h'+h+x} + \varepsilon_{h+x, \downarrow} u_h^2 - \varepsilon_{h\uparrow} v_h^2 + \varepsilon_{h'+x, \downarrow} u_{h'}^2 - \varepsilon_{h'\uparrow} v_{h'}^2]^{-1},$$

где ;ккк

(14-15)

$$2\xi_h = \varepsilon_{h\uparrow} + \varepsilon_{h+x, \downarrow} - \frac{1}{N}\sum_{h'} J^2(u_{h'}^2 - v_{h'}^2) \times$$

$$\times [\omega_{g=h'+h+x} + \varepsilon_{h+x, \downarrow} u_h^2 - \varepsilon_{h\uparrow} v_h^2 + \varepsilon_{h'+x, \downarrow} u_{h'}^2 - \varepsilon_{h'\uparrow} v_{h'}^2]^{-1}.$$

After some transformations,

$$\xi_h u_h v_h = -\frac{1}{2}(u_h^2 - v_h^2) c_h.$$ (17)

with

$$c_h = \frac{1}{N}\sum_{h'} J^2 u_{h'} v_{h'} [\omega_{g=h'+h+x} + \tilde{u}_h + \tilde{e}_{h'}]^{-1}.$$ (18)

results. Proof is given that (18) has only the trivial solution $c_k = 0$
which is obtained in the normal state. It is thus shown that the inter-
action of conduction electrons with spin waves in a ferromagnetic material
has a repulsive character and cannot give rise to a superconductive state.
This result is, in addition, derived from the equality of expressions for
the exchange interaction with (a) longitudinal phonons and (b) spin waves.
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S/056/61/040/006/011/031
B111/B201

Interaction of conduction electrons ...

It is finally pointed out that a superconductive state occurs neither on
interactions with spin waves, but generally if quasiparticles with integer
spin are exchanged. A. I. Akhiyezer and I. Ya. Pomeranchuk are mentioned.
There are 1 figure and 10 references: 7 Soviet-bloc and 3 non-Soviet-
bloc.

ASSOCIATION: Institut fiziki metallov Akademii nauk SSSR, Chelyabinskiy
              gosudarstvennyy pedagogicheskiy institut (Institute of
              Physics of Metals AS USSR, Chelyabinsk State Pedagogical
              Institute)

SUBMITTED: September 20, 1960

Card 5/5

S/126/63/015/002/032/033
E039/E435

AUTHORS: Vonsovskiy, S.V., Svirskiy, M.S.

TITLE: On superconductivity in non-uniform ferromagnetics

PERIODICAL: Fizika metallov i metallovedeniye, v.15, no.2, 1963,
316-318

TEXT: The theory on the existence of superconductivity in
ferromagnetics is discussed together with some related questions.
A fully penetrated field is not specially stipulated and other
assumptions remain as in Ref.1 (L.N.Cooper. Phys.Rev.Lett., v.8,
1962, 367).   It is shown that superconductivity can only occur in
ferromagnetics when

$$p < \varepsilon_{0,bcs}\sqrt{\frac{1}{2} + \frac{3N\varepsilon F}{2a(p)}} \qquad (8)$$

where $p = \frac{1}{2}\mu I$, I - energy parameter for $s-d$ or $s-f$ exchange,

$\mu = \frac{1}{N_1}\sum_j s_1^2$, $\varepsilon_{0,bcs}$ - the gap in the energy spectrum of a super-

Card 1/2

S/126/63/015/002/033/033
E039/E435

AUTHORS: Vonsovskiy, S.V., Svirskiy, M.S.

TITLE: On superconductivity in nonuniform paramagnetics and
            high critical field alloys

PERIODICAL: Fizika metallov i metallovedeniye, v.15, no.2, 1963,
            318-320

TEXT: Recent attempts to develop a phenomenological explanation
of the high value of the critical magnetic fields for certain
alloys are discussed.   The work of L.N.Cooper (Phys.Rev.Lett.,
v.8, 1962, 367) is considered in particular.   Cooper does not
show that the energy of superconducting paramagnetics is lower
than the energy of normal paramagnetics.   It is evident that only
in this case is it possible to realize a superconducting para-
magnetic and hence it is necessary to examine the conditions under
which its energy is lower than for both the energy of the non-
paramagnetic superconductor and the energy of the normal para-
magnetic.   Expressions for these conditions are derived and it
is shown that

$$H < \frac{\varepsilon_{0,bcs}}{\mu} \sqrt{\frac{1}{2} + \frac{3}{2} \frac{N\varepsilon_F}{a(H)}} . \qquad (5)$$

Card 1/2

L 18521-63   EWT(1)/BDS/ES(w)-2   AFFTC/ASD/ESD-3/IJP(C)/SSD   Pab-4

ACCESSION NR: AP3000113   S/0126/63/015/004/0635/0638

AUTHOR: Svirskiy, M. S.   65

TITLE: Notes on the paramagnetism of free electrons   64

SOURCE: Fizika metallov i metallovedeniye, v. 15, no. 4, 1963, 635-638

TOPIC TAGS: paramagnetism, free electron

ABSTRACT: The studies of paramagnetism unrelated to temperature are usually limited to the case $\mu H \ll \zeta_o$ where μ is Bohr magneton, H is magnetic field intensity, ζ_o is ultimate Fermi energy in the case $n_+ = n_-$, (n_+ and n_- are the concentrations of the conduction electrons with the + and - spin projections). With this limitation, and at T = 0, the approximate expression obtained for a paramagnetic susceptibility is shown in Formula 1 $\chi = \frac{3}{2} \mu^2 \frac{n}{\zeta_0}$. In this formula n is free electron concentration.

The author presents mathematical evidence that the problem concerning the spin paramagnetism of free electrons, with the use of the isotropic square law of dispersion (disregarding the diamagnetic effect), has an exact solution at T = 0. He expresses his gratitude to S. V. Vonsovskiy for discussion of the problem and for valuable comments. Orig. art. has: 18 formulas, 1 figure and 1 table.

Card 1/2 / ASSN: CHELYABINSK STATE TEACHERS INST.

ACCESSION NR: AP4017348

S/0126/64/017/002/0168/0175

AUTHORS: Vonsovskiy, S. V.; Svirskiy, M. S.,

TITLE: Effect of conduction electron exchange on ferromagnetic spin ordering in metals

SOURCE: Fizika metallov i metallovedeniye, v. 17, no. 2, 1964, 168-175

TOPIC TAGS: conduction electron exchange, electron polarization, ferromagnetic spin ordering, Hamiltonian, Fermi operator, Green's function, spin-ordered state

ABSTRACT: The effect of conduction electron exchange on electron polarization (satisfied by s-d or s-f exchanges) and on ferromagnetic spin ordering of electrons in the incomplete electronic shells of metallic atoms has been studied analytically. The Hamiltonian of the d and f electrons is written in terms of Fermi operators, and its solution is carried out by introducing the two-dimensional Green's function, limiting it to a first approximation. The energy of the system thus is represented by
$$\langle H \rangle = E_0 - I_0 - \frac{3n}{16\zeta_0} \cdot \frac{I^2}{(1-a)} (\langle n_{g\uparrow} \rangle - \langle n_{g\downarrow} \rangle)^2 - \frac{1}{2} J n_g \bar{n}_g$$
where $n_g = \sum_o \langle n_{go} \rangle$, $E_0 = \frac{3}{5} n \zeta_0$ и $I_0 = 4\pi e^2 \left(\frac{3n}{8\pi}\right)^{4/3}$

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ACCESSION NR: AP4017348

The kinetic and transfer energy of the conduction electrons at $n_\uparrow = n_\downarrow = n/2$ and the two terms on the right hand side of the above expression account for the effect s-d or s-f of the (J) exchange. The third term shows that the spin-ordered state of interior shells appears in a more favorable energy state than in the absence of such ordering. This mechanism of indirect exchange thus appears to be $(1 - \alpha)^{-1}$ times more effective when including the conduction electron exchange term. For Gd the coefficient $(1 - \alpha)^{-1}$ yields a value of 1.75. Orig. art. has: 40 equations.

ASSOCIATION: Institut fiziki metallov AN SSSR (Institute of Physics of Metals AN SSSR);Chelyabinskiy gosudarstvennyy pedinstitut (Chelyabinsk State Teachers College)

SUBMITTED: 14Sep63   DATE ACQ: 18Mar64   ENCL: 00

SUB CODE: PH   NO REF SOV: 006   OTHER: 004

Card 2/2

ACCESSION NR: AP4023382   S/0048/64/028/003/0418/0422

AUTHOR: Vonsovskiy, S.V.; Svirskiy, M.S.

TITLE: On the problem of existence of ferromagnetism and superconductivity /Re-
port, Symposium on Ferromagnetism and Ferroelectricity held in Leningrad 30 May &
5 June 1963/

SOURCE: AN SSSR. Izvestiya. Seriya fizicheskaya, v.28, no.3, 1964, 418-422

TOPIC TAGS: ferromagnetism, paramagnetism, superconductivity, electron spin, Bar-
deen-Cooper-Schrieffer theory, superconductivity with ferromagnetism

ABSTRACT: The problem of the existence of ferromagnetism and superconductivity is
of interest in view of the fact that investigation thereof can yield information of
the physical nature of ferromagnetism and superconductivity in metals and thereby
serve for further elaboration of the pertinent parts of solid state theory. This
problem is intimately bound in with the question of the influence exerted on inter-
action of conduction electrons by shift of the Fermi momentum surfaces for elec-
trons with different spin components and by exchange of virtual spin waves. The
latter factor also obtains in antiferromagnets; hence discussion of it is of added

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ACCESSION NR: AP4023382

interest.   There appears to be unanimity of opinion among investigators
regarding the role played by the first factor, which was first mention-
ed in 1958 by the present authors (Doklady AN SSSR, 122, 204, 1958).
The second factor is generally agreed to give rise to repulsion of
electron pairs in the singlet state and thus hamper or inhibit super-
conductivity.   However, other students report (A. I. Akhiyezer and
I. Ya. Pomeranchuk, Zh. eksp. i teor. fiz., 36, 859, 1959 and A. I.
Akhiyezer and I. A. Akhiyezer, Ibid., 43, 2208, 1962) that in the
triplet state (zero projection of the pair spin) a change occurs in
the sign of the matrix elements defining the electron interaction so
that an additional attraction favoring establishment of superconductivit
appears.   Hence it was deemed desirable to consider the question of
Cooper pairs in singlet and triplet states in more detail in the
framework of the Bardeen-Cooper-Schrieffer-Bogolyubov theory.   The
question is analyzed in the present paper.   Equations are written for
the interaction Hamiltonian with operators to distinguish between the
singlet and triplet states.   Some of the results of the analysis are
the following: In a nonhomogeneous ferromagnet superconductivity and
ferromagnetism can exist in the case of sufficiently weak sd and sf
interaction.   The shift of the Fermi momentum surfaces decreases by

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ACCESSION NR: AP4023382

a significant factor as compared with the 2p value obtaining in the
normal state. Persistance of the reduced shift permits realization of
ferromagnetism due to superexchange interaction. In addition, an
inequality is derived to evaluate the upper bound of the field H for
which there may exist both superconductivity and paramagnetism. This
inequality is a generalization of A. M. Clogston's criterion. (Phys.
Rev. Letters, 8, 367, 1962). Orig. art. has: 21 formulas.

ASSOCIATION: Institut fiziki metallov Akademii nauk SSSR (Institute of
the Physics of Metals, Academy of Sciences SSSR); Chelyabinskiy gosudarstvennyy
pedagogicheskiy institut (Chelyabinsk State Pedagogical Institute)

SUBMITTED: 00   DATE ACQ: 10Apr64   ENCL: 00

SUB CODE: PH   NO REF SOV: 003   OTHER: 005

Card 3/3

SVIRSKIY, M.S.

Effect of the frequency of sound on its absorption by a metal
in a magnetic field. Zhur. eksp. i teor. fiz. 44 no.2:628-
632 F '63.   (MIRA 16:7)

1. Chelyabinskiy gosudarstvennyy pedagogicheskiy institut.

VONSOVSKIY, S.V.; SVIRSKIY, M.S.

Problem of the coexistence of ferromagnetism and superconductivity. Izv. AN SSSR. Ser. fiz. 28 no. 3:418-422 M '64.
(MIRA 17:5)

1. Institut fiziki metallov AN SSSR i Chelyabinskiy gosudarstvennyy pedagogicheskiy institut.

ACCESSION NR: AP4037574   S/0056/64/046/005/1619/1631

AUTHORS: Vonsovskiy, S. V.; Svirskiy, M. S.

TITLE: Superconductivity of an electron system with singlet or
triplet pairs

SOURCE: Zh. eksper. i teor. fiz., v. 46, no. 5, 1964, 1619-1631

TOPIC TAGS: superconductivity, conduction electron, phonon, Cou-
lomb field, ferromagnetism, antiferromagnetism, paramagnetism, ex-
change force

ABSTRACT: The influence of the type of symmetry of the coordinate
part of the wave function of the electron (cooper) pair on the estab-
lishment of the superconducting state was investigated in view of
the importance of the question of the realization of the supercon-
ducting state with singlet or triplet (Cooper) pairs of conduction
electrons to problems involving the coexistence of superconductivity

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ACCESSION NR: AP4037574

with magnetic properties and other questions. It is shown that
the type of symmetry of the coordinate part of the wave function of
the electron pair manifests itself first of all in the appearance of
an "exchange" part of the matrix element, characterizing the transi-
tions of these pairs and having different signs in the singlet and
in the triplet states. The exchange parts of the matrix elements
characterizing the interaction of the conduction electrons, induced
by phonons, Coulomb forces, and also spin waves of a ferromagnet or
an antiferromagnet, are determined. The effect of the exchange part
of the interaction on the establishment of the superconducting state
with singlet or triplet pairs is discussed. In addition, trial wave
functions of a superconductor with triplet or triplet pairs corre-
sponding to the Bardeen, Cooper, and Schrieffer method (Phys. Rev.
v. 108, 1175, 1957) are constructed and the corresponding variational
problem is solved. The manifestations which make it possible to
include the triplet pairs in the Bogolyubov method (N. N. Bogolyubov,
V. V. Tolmachev, D. V. Shirkov, Novy*y metod v teorii sverkhprovodi-

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ACCESSION NR: AP4037574

mosti, 1958) and in the method of two-time temperature Green's
functions (D. N. Zubarev, UFN v. 71, 71, 1960), are also indicated.
It is shown that the presence of the "exchange" part of the matrix
element, determining the transitions of the singlet or triplet
pairs, is indeed a general property of all the interactions con-
sidered above (induced by virtual photons, Coulomb forces, or vir-
tual waves of a ferromagnet or antiferromagnet). In the vicinity
of the Fermi surface the character of the interaction described by
the exchange part corresponding to the triplet states experiences
an abrupt transition from attraction to repulsion for the interac-
tion induced by the phonons and conversely from repulsion to attrac-
tion for interactions induced by Coulomb forces or spin waves). The
latter can explain the coexistence of superconductivity with ferro-
magnetism or antiferromagnetism, or else paramagnetism. Orig. art.
has: 60 formulas.

ASSOCIATION: Institut fiziki metallov Akademii nauk SSSR (Institute

Card   3/4

SVIRSKIY, M.S.

Remarks on the theory of superconductors with singlet and
triplet pairs. Fiz. met. i metalloved. 17 no.4:629-631 Ap '64.
(MIRA 17:8)

1. Chelyabinskiy gosudarstvennyy pedagogicheskiy institut.

L 13492-65 EWT(1)/T/EB?(b)-2 IJP(c)/ASD(a)-5/AFWL/AS(mp)-2/SSD/ESD(t)

ACCESSION NR: AP4047903 S/0056/64/047/004/1354/1366

AUTHORS: Vonsovskiy, S. V.; Svirskiy, M. S.

TITLE: Effect of the multiplicity of d(f) shells on the interaction between electrons in a crystal

SOURCE: Zhurnal eksperimental'noy i teoreticheskoy fiziki, v. 47, no. 4, 1964, 1354-1366

TOPIC TAGS: electron interaction, shell theory, exchange model, superconductivity, spin ordering, electric resistivity, crystal

ABSTRACT: The exchange model previously developed by various workers (e.g., T. Kasuya, Progr. Theor. Phys. v. 16, 45, 1956) is generalized to include the change induced by the conduction electrons in the multiplicity of the d or f shells, since the exchange processes connected with the change in the d-shell spin may turn out to be important for phenomena such as superconductivity, spin ordering, elec-

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L 13492-65
ACCESSION NR: AP4047903

tric resistivity, and others. This is done by adding suitable terms
to the Hamiltonian of the direct exchange interaction of the d(f)
electrons, and examining the properties of the corresponding mul-
tiplicity excitation waves. By way of applications, the generalized
s-d exchange model is applied to the establishment of the state of
superconductivity, and it is shown that the additional Hamiltonian
can induce a supplementary attraction (on top of the phonon attraction)
of triplet electron pairs and thus contribute to establishment of
the state of superconductivity. This incidentally helps explain the
experimentally observed increase in the critical temperature of the
transition to the superconducting state of titanium to which various
impurities have been added. The ordering of the conduction electron
spins and the spins of the d(f) shells is also considered. Orig.
art. has: 45 formulas and 1 table.

ASSOCIATION: Institut fiziki metallov Akademii nauk SSSR (Institute
of Metal Physics, Academy of Sciences SSSR); Chelyabinskiy gosudar-

Card 2/3

L 10492-65
ACCESSION NR: AP4042903

stvenny+y pedagogicheskiy institut (Chelyabinsk State Pedagogical
Institut)

SUBMITTED: 06Mar64   ENCL: 00

SUB CODE: NP, SS   NR REF SOV: 008   OTHER: 008

Card 3/3

L 29526-65   EWT(1)/EEC(f)/EWA(d)   IJP(c)   GG

ACCESSION NR: AP4034066   S/0126/64/017/004/0629/0631

AUTHOR: Svirskiy, M. S.

TITLE: Comment on the theory of a superconductor with singlet or triplet pairs

SOURCE: Fizika metallov i metallovedeniye, v. 17, no. 4, 1964, 629-631

TOPIC TAGS: superconductor, excited state, canonical transformation, wave function

ABSTRACT: In connection with the operators $B_k^{S^+} = \frac{1}{\sqrt{2}}(b_k^+ + b_{-k}^+);\ B_k^{T^+} = \frac{1}{\sqrt{2}}(b_k^+ - b_{-k}^+)$

that generate singlet and triplet pairs with null spin projection, the following expressions are introduced for S $S_s = -i \sum_k' \sqrt{2}\, \theta_k (B_k^{S^+} - B_k^S);$

$S_T = -i \sum_k' \sqrt{2}\, \theta_k (B_k^{T^+} - B_k^T);$ where subscripts s and T

indicate "singlet" and "triplet" respectively, and the prime corresponds to summation over all k, for $k_z > 0$. This work was done in order to demonstrate that there exist transitions from the method used by (2) J. Bardeen, L. N. Cooper, and J. R.

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L 29526-65

ACCESSION NR: AP40?4066

Schrieffen (Phys. Rev., 1957, 108, 1175) to the method used by (3) N. N. Bogolyubov, V. V. Tolmachev, and D. V. Shirkov (Novyy metod v teorii sverkhprovdimosti, M., 1958). Using the expression for S_g, a canonical transformation is obtained similar to that described in (3). Furthermore, the action of the operator e^{iS} on the wave function ψ_v is similar to the wave function in the ground state (in the presence of singlet pairs) considered in (2). A similar canonical transformation can be written for a triplet pair. The same can be done to excited states by considering three or four operators $\hat{a}$ on the vacuum Q_v. In this manner a correspondence between works (2) and (3) can be shown to exist for singlet as well as for triplet excitation states. "The author expresses his deep gratitude to S. V. Vonsovskiy for his advice and comments." Orig. art. has: 22 formulas.

ASSOCIATION: Chelyabinskiy gosudarstvennyy pedagogicheskiy institut (Chelyabinsk State Teachers Institute)

SUBMITTED: 24Sep63   ENCL: 00   SUB CODE: GP, ME

NO REF SOV: 002   OTHER: 003

Card 2/2

VONSOVSKIY, S.V.; SVIRSKIY, M.S.

Effect of the multiplicity of d(f)-shells on electron interaction in crystals. Zhur. eksp. i teor. fiz. 47 no.4:1354-1366 O '64.
(MIRA 18:1)

1. Institut fiziki metallov AN SSSR i Chelyabinskiy gosudarstvennyy pedagogicheskiy institut.

L 5337-66   EWT(1)   IJP(c)   GG

ACCESSION NR: AP5021134

UR/0056/65/049/002/0682/0690

AUTHOR: Vonsovskiy, S. V.; Svirskiy, M. S.

TITLE: Theory of s-f exchange for nonvanishing orbital angular momentum

SOURCE: Zhurnal eksperimental'noy i teoreticheskoy fiziki, v. 49, no. 2, 1965, 682-690

TOPIC TAGS: exchange reaction, rare earth element, nuclear shell model, quantum number, superconductivity

ABSTRACT: The authors analyze s-f exchange interaction in the case when the total angular momentum J of the f-shell is a good quantum number. The approach used differs from that employed in an earlier paper (ZhETF v. 37, 1354, 1964), where the quantum number J was assumed conserved. The Hamiltonian for s-f exchange connected with changes in J is established and its effects on indirect exchange interaction and on superconductivity are assessed. This Hamiltonian, together with the indirect-exchange Hamiltonian and the conduction-electron interaction Hamiltonian, which are derived on its basis, makes it possible to investigate the distinguishing features of processes accompanied by excitation of the total angular momentum of rare-earth ions. It is shown that excitations of J cannot lead to ferromagnetic ordering of different rare-earth ions, but can influence the occurrence of

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0901   1140

L 5337-66

6

ACCESSION NR: AP5021134

ordered states other than ferromagnetic, characterized by superpositions of states with different J. In addition, these excitations of J can contribute to the proper energy of the rare-earth ions. The special behavior effect of Eu impurities on the lowering of the critical superconductivity temperature is explained. The results obtained by R. Brout and H. Suhl (Phys. Rev. Lett. v. 2, 387, 1959) and by C. Herring (Physica v. 24, S184, 1958) are reviewed critically. Orig. art. has: 23 formulas and 1 table.

ASSOCIATION: Institut fiziki metallov Akademii nauk SSSR (Institute of Metal Physics, Academy of Sciences, SSSR); Chelyabinskiy gosudarstvennyy pedagogicheskiy institut (Chelyabinsk State Pedagogical Institute)

SUBMITTED: 13Mar65   ENCL: 00   SUB CODE: GP, SS

NR REF SOV: 008   OTHER: 017

Card 2/2

L 07105-67   EWT(m)/EWP(t)/ETI   IJP(c)   JD/JG

ACC NR: AP6029097   SOURCE CODE: UR/0048/66/030/006/0906/0914

AUTHOR: Vonsovskiy, S.V.; Irkhin, Yu.P.; Svirskiy, M.S.

ORG: Institute of Metal Physics, Academy of Sciences, SSSR (Institut fiziki metallov Akademii nauk SSSR); Chelyabinsk State Pedagogic Institute (Chelyabinskiy gosudarst-vennyy pedagogicheskiy institut)

TITLE: Exchange interactions in rare earth metals and alloys /Report, All-Union Conference on the Physics of Ferro- and Antiferromagnetism held 2-7 July 1965 in Sverdlovsk/

TOPIC TAGS: rare earth metal, electron interaction, exchange interaction, magnetic property, superconductivity, phase transition, mathematic physics

ABSTRACT: The authors employ the formalism of second quantization to discuss the exchange interaction between conduction electrons and the electrons in the f shells of the ions of a rare earth metal lattice, and the exchange interaction between the f electrons to which it gives rise. Additional terms to the s-f exchange Hamiltonian of S.N.Liu (Phys. Rev., 121, 451, (1961)) are obtained, which contain operators that change the total angular momentum J of the f-shell electrons by one unit, and the effects of the new terms on magnetic ordering, superconductivity, and phase transitions are discussed. The $J_n^e J_m$ terms in the f-f exchange Hamiltonian obtained in the second order

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ACC NR: AP6029097

of perturbation theory are independent of energy, the s-f exchange associated with change of J, therefore, cannot lead to. long range magnetic order. The new terms in the s-f exchange Hamiltonian lead to interactions between singlet and triplet pairs of conduction electrons. The interaction between singlet pairs is repulsive and results in a reduction of the transition temperature to the superconducting state. The reduction of the transition temperature of La by admixtures of Eu is quantitatively (within 20%) accounted for. The addition of other rare earth metals than Ey, for which $J \neq 0$, only slightly affects the transition temperature. The effect of Eu on the $\gamma - \alpha$ phase transition temperature in Ce is also accounted for. A second, more general, exchange Hamiltonian is expressed with the aid of second quantization operators for groups of electrons in a form involving coefficients that can be evaluated in any particular case by use of the appropriate fractional parentage and 6j coefficients. With the aid of this Hamiltonian one can treat anisotropic effects that arise through participation of the orbital angular momentum of the conduction electron, rather than its spin, in the exchange process. Orig. art. has: 27 formulas.

SUB CODE: 20   SUBM DATE: 00   ORIG. REF: 007   OTH REF: 015

Card 2/2

MARININ, N.S.; SVIRSKIY, R.A.; SUKHOBRUSOV, V.I.

Protetion of shirt-circuits to ground of the 6 kv. networks at iron
open pit mines. Prom.energ. 16 no.5:30 My '61.   (MIRA 14:7)
        (Electric networks)   (Electricity in mining)

SVIRSKIY, R.A.; MOSKVA, P.V.

Earth fault protection of electric motors. Prom.energ. 17 no.2:
25 F '62.   (MIRA 15:3)
                                (Electric protection)

SVIRSKIY, R.A., inzh.

Use of condensers in an undercurrent protection system. Prom.
energ. 18 no.4:35-37 Ap '63.   (MIRA 16:4)
        (Electric substations)   (Electric protection)

BOGDASHEVSKIY, Viktor Ivanovich; DONICH, Konstantin Konstantinovich
        [deceased]; IOFFE, Veniamin Isaakovich; KLEMPERT, Yakov
        Emmanuilovich; KOLYANKOVSKIY, Viktor Polikarpovich;
        KRAINSKIY, Abram Isayevich; POLOTSKIY, Solomon Gertsovich;
        SVIRSKIY, Solomon Vladimirovich; ANDREYEV, P.A., retsenzent;
        IVANOV, N.S., retsenzent [deseased]; POMAZKOV, N.S.,
        retsenzent; KRAINSKIY, A.I., nauchn., red.; SHAKHNOVA, V.M.,
        red.; KOROVENKO, Yu.N., tekhn. red.

        [Accounting in shipbuilding and machinery manufacturing
        enterprises] Uchet na sudostroitel'nykh i mashinostroitel'-
        nykh predpriiatiiakh. [By] V.I.Bogdashevskii i dr. Lenin-
        grad, Sudpromgiz, 1963. 502 p.   (MIRA 17:3)

SVIRSKIY, V., arkhitektor

Using small tiles in facing wall panels and blocks. Na stroi. Mosk.
1 no.6:20   Je '58.   (MIRA 11:9)
            (Tile laying) (Walls)

NEKLYUDOV, M.K., kand. tekhn. nauk; SVIRSKIY, V.A., inzh.;
DEGTYAREVA, A.P., inzh., red.; ZVORIKINA, L.N., red.izd-
va; KASIMOV, D.Ya., tekhn. red.

[Operation and maintenance of motor rollers] Rabota na motor-
nykh katkakh. Pod red. A.P.Degtiareva. Moskva, Gos. izd-vo lit-
ry po stroit., arkhit. i stroit. materialam, 1961. 86 p.
                                              (MIRA 15:2)

1. Ukraine. Ministerstvo stroitel'stva. Tekhnicheskoye upravleniye.
                    (Road rollers)

SVIRSKIY, V.A., inzh.

Prospects for using jaw-type shovels on excavators equipped with
straight shovels. Mekh. stroi. 20 no.9:20-22 S '63.
(MIRA 16:10)

(Excavating machinery)

SVIRSKIY, V.A.

Discussion on N.M.Dantsig's article, " Considerations on the
selection of exposure of windows in dwellings and community buildings.
Gig. i san. no.9:51-54 S '54.   (MLRA 7:10)
          (HOUSING,
               exposure of windows)

GRADOV, G.A.; KALININA, G.F.; MODEL', A.M.; NEVRAYEV, G.A.; SAMOYLOV,
A.V.[deceased]; SVIRSKIY, V.A.; KOSITSKIY, Ya.V., kand. srkhit.,
nauchnyy red.; MANIKOV, M.Ye., kand. med. nauk, nauchnyy red.;
MOROZOVA, G.V., red.; BRUSINA, L.N., tekhn. red.

[Sanatoriums and rest homes; manual on designing] Sanatorii i doma
otdykha; posobie po proektirovaniiu. Moskva, Gosstroiizdat, 1962.
223 p.   (MIRA 15:7)
1. Akademiya stroitel'stva i arkhitektury SSSR. Institut obshche-
stvennykh zdanii i sooruzhenii.
          (Sanatoriums)   (Labor rest homes)

DEGTYAREV, Aleksey Petrovich, inzh.; LUR'YE, Lev Iosifovich; REYSH,
Arvid Karlovich; SVIRSKIY, Viktor Aleksandrovich; TABUNIHA,
M.A., red. izd-va; RUDAKOVA, N.I., tekhn. red.

[Bulldozer work]Bul'dozernye raboty. Pod red. A.P.Degtiareva.
Moskva, Gosstroiizdat, 1962. 212 p.   (MIRA 15:12)
                        (Bulldozers)

KIRPICHNIKOV, Leonid Aleksandrovich; KHARIF, Moisey Izraylevich;
SVIRSKIY, V.P., inzh., retsenzent; KORESTYNSKIY, N.D., inzh.,
retsenzent; KORESTYNSKIY, N.D., inzh., retsenzent; YAROSHENKO,
V.I., inzh., inzh., retsenzent; BOGACHENKO, V.Ye., inzh.,
nauchnyy red.; LAPINA, Z.D., red. izd-va; SARAYEV, B.A., tekhn .
red.

[Automatic control of transshipment machinery and the electric
power supply network in sea ports] Avtomatizatsiia peregruzoch-
nykh mashin i elektricheskikh setei v morskikh portakh. Mo-
skva, Izd-vo "Morskoi transport," 1961. 147 p.   (MIRA 15:3)
    (Cargo handling—Equipment and supplies)
   (Electric power distribution) (Automatic control)

SVIRSKIY, Ya.I.; SKLYAROV, L.A.; GUTMAN, L.M.

     Improved performance of the BG-100 automatic batcher; 1955 model.
     Koks i khim. no.11:19-21 '61.
                                                 (MIRA 15:1)

    1. Stalinskiy koksokhimicheskiy zavod.
           (Coal preparation plants--Equipment and supplies)

SVIRSKIY, Yuliy Il'ich; UL'YANOV, Yuriy Aleksandrovich; MEL'NIKOVA, Zh.K., red.

[Machines under the earth] Mashiny pod zemlei. Moskva, Izd-vo "Znanie," 1964. 31 p. (Novoe v zhizni, nauke, tekhnike. IV Seriia: Tekhnika, no.16)   (MIRA 17:10)

SVIRSKIY, Yu.I., inzh.

Coal mine building sites of the Donets Economic Council. Shakht.
stroi. 9 no.10:31-32 O '65.
(MIRA 18:9)

SVIRSKIY, YA. N.

"Selection in the Process of Inter-Specie Pollination of Rye." Agrobiol. 3, 1949.
Cand. Agricultural Sci. Mbr., Belorussian State Selection Sta. Zazer'ye, Ruden Rayon,
Minsk Oblast, -c1949.

SVIRSKIY, YA. N

MUKHIN, N.D., kandidat sel'skokhozyaystvennykh nauk, redaktor;
SVIRSKIY, Ya. N., kandidat sel'skokhozyaystvennykh nayk, redaktor;
LAZARCHIK, K., redaktor; STEPANOVA, M., tekhnicheskiy redaktor

[Manual for the certification of field crops in the White Russian
S.S.R.] Rukovodstvo po aprobatsii polevykh kul'tur BSSR.
Minsk, Gos. izd-vo BSSR, 1956. 299 p.   (MLRA 10:4)
          (White Russia--Field crops)

GEYMAN, L., inzh.; SVIRSKIY, Yu., inzh.

Concrete obtained without water or cement. IUn.tekh. 4
no.2:8-9 F '60.   (MIRA 13:6)
   (Lightweight concrete) (Furaldehyde)

SVIRSKIY, Yu. [Svirs'kyi, IU.], inzh. (Moskva)

Concrete-laying machine. Nauka i zhyttia 12 no.4:24 Ap '62.
(MIRA 15:8)

(Concrete construction)

SVIRSKIY, Yu.I., inzh.

Driving the Lyubertsy Station ventilation tunnel, aerated by a
PShch-3.7 shield. Shakht. stroi. 7 no.7:28-29 Jl '63.
(MIRA 16:10)

SVIRYAKIN, P. I.

Л. Н. Камнев

Некоторые селенбаные свойства полупроводникового германия, обусловленные эффектом модуляции толщины базы

4. СЕКЦИЯ ПРИЕМНЫХ УСТРОЙСТВ

Руководитель Н. Н. Чистяков

12 июня

(с 10 до 16 часов)

М. Г. Голубков,
Л. Т. Рязанов,
Л. С. Тимофеев

Приемное устройство для измерения статистических характеристик сигналов при тропосферном распространении радиоволн.

Ю. Н. Бабанов

Использование фазовых предискажений сигнала для повышения помехоустойчивости систем связи.

В. В. Рогозин

Метод определения параметров кристаллического детектора в сантиметровом диапазоне.

12 июня

(с 18 до 22 часов)

18

В. П. Шамгин
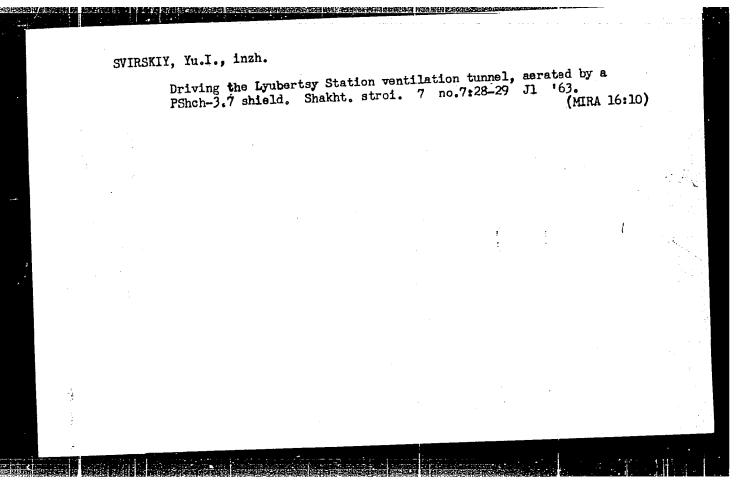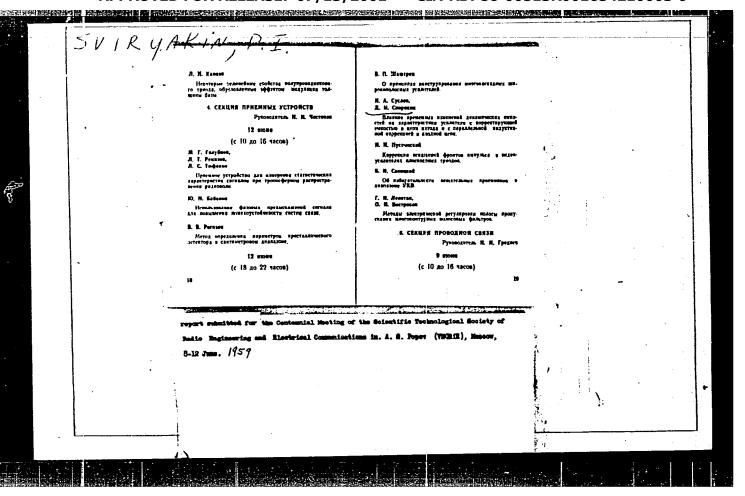
О принципах конструирования многокаскадных широкополосных усилителей.

Н. А. Суслов,
Л. М. Сворень

Влияние временных изменений динамических емкостей на характеристики усилителя с корректирующей емкостью в цепи катода и с параллельной индуктивной коррекцией в анодной цепи.

Я. Н. Пустынский

Коррекция искажений фронтов импульса в видеоусилителях амплитудными триодами.

Б. И. Смоляной

Об избирательности активных приемников в диапазоне УКВ.

Г. Н. Леонтьев,
О. Н. Вострокнутов

Методы электрической регулировки полосы пропускания многоконтурных полосовых фильтров.

5. СЕКЦИЯ ПРОВОДНОЙ СВЯЗИ

Руководитель Н. Н. Гродня

9 июня

(с 10 до 16 часов)

19

reports submitted for the Centennial Meeting of the Scientific Technological Society of

Radio Engineering and Electrical Communications im. A. S. Popov (VNTORiE), Moscow,

8-12 June. 1959

SUSLOV, I.A.; SVIRYAKIN, D.I.

Effect of temporary changes in dynamic conductivities on the
characteristics of a video-frequency amplifier with a correcting
capacitance in the cathode circuit and a parallel induction
correction in the anode circuit. Izv. TPI 105:102-118 '60.
(MIRA 16:8)

1. Predstavleno nauchnym seminarom radiotekhnicheskogo fakul'teta
Tomskogo ordena Trudovogo Krasnogo Znameni politekhnicheskogo
instituta imeni Kirova.
(Amplifiers (Electronics))

SVIRYAKIN, V.T.

Simple appliaence for fluorescence microscopy in visible light;
brief considerations on the technique of examination. Mikrobiologiia
25 no.5:612-614 S-O '56.   (MLRA 10:1)

1. Ukrainskiy nauchno-issledovatel'skiy institut tuberkuleza, Kiyev.
        (MICROSCOPY, apparatus and instruments,
            appliance for fluorescence microscopy in visual light
            in microbiol. (Rus))
        (MICROBIOLOGY, apparatus and instruments,
            same)

SVIRYAKIN, V.T., nauchnyy sotrudnik

Morphology of the elastic structures of the pleura in chronic
tuberculous empyemas. Pat.,klin.i terap.tub. no.8:113-116 '58.
                                               (MIRA 13:7)
1. Iz pato-morfologicheskoy laboratorii (rukovoditel' - starshiy
nauchnyy sotrudnik V.F. Yur'eva) Ukrainskogo nauchno-issledova-
tel'skogo instituta tuberkuleza im. akad. F.G. Yanovskogo.
                 (PLEURA--TUBERCULOSIS)

CHERKASSKIY, L.P., kand.med.nauk; LOSEV, V.A., kand.med.nauk; SVIRYAKIN, V.T.

Experimental data on changes in the blood circulatory system, respiration and blood following resection of the lung. Probl. tub. 37 no.4:88-96 '59.   (MIRA 12:10)

1. Iz patofiziologicheskoy (rukovoditel' - deystvitel'nyy chlen AMN SSSR prof.N.N.Gorev) i patologoanatomicheskoy (rukovoditel' - dotsent V.F.Yur'yeva) laboratoriy Ukrainskogo nauchno-issledovatel'-skogo instituta tuberkuleza (dir. - dotsent A.S.Mamolat).
        (LUNGS, surg.
            exper. resection, eff. on blood, blood circ. &
            resp. in rabbits (Rus))
        (BLOOD
            eff. of exper. lung resection in rabbits (Rus))
        (BLOOD CIRCULATION
            same)
        (RESPIRATION
            same)

KOLOMIYTSEV, V.P.; SVIRYAKIN, V.T.

Clinical and morphological changes in the palatine tonsils in para-
tonsillar abscesses. Vest. otorin. 22 no.4:66-72 Je-Ag '60.
(MIRA 13:12)
(TONSILS--DISEASES)   (THROAT--ABSCESS)

SVIRYAKIN, V. T. (Kiyev,ul. Parizhskoy kommuny, d. 24, kv. 23)

Morphological changes in the pleura and lungs in tuberculous
empyemas according to surgical data. Grud. khir. no.4:75-82 '61.
(MIRA 14:12)

1. Iz Ukrainskogo nauchno-issledovatel'skogo instituta tuberkuleza
(dir. A. S. Mamolat), Kiyev.

(EMPYEMA)   (PLEURA—TUBERCULOSIS)   (TUBERCULOSIS)

SVIRYAKIN, V. T.; VARFOLOMEYEVA, Ye. N.

Aneurysm of the aorta and its perforation in tuberculous spondy-
litis. Probl. tub. no.2:101-102 '62.   (MIRA 15:2)

1. Iz patologoanatomicheskoy laboratorii (zav. - dotsent V. F.
Yur'yeva) i kliniki kostno-sustavnogo tuberkuleza (zav. - prof.
B. S. Kutsenok) Ukrainskogo nauchno-issledovatel'skogo instituta
tuberkuleza imeni akad. F. G. Yanovskogo (dir. - dotsent A. S.
Mamolat)

         (SPINE—TUBERCULOSIS)   (AORTIC ANEURYSMS)